

REMARKS/ARGUMENTS

Claims 1-48 are pending in the present application.

This Amendment is in response to the Final Office Action mailed January 25, 2008 to support a Request for Continued Examination (RCE) filed concurrently. In the Final Office Action, the Examiner rejected claims 9, 12, 13, and 15 under 35 U.S.C. §102(e) and claims 9-14 and 16-24 under 35 U.S.C. §103(a). Applicant has amended claims 9-10 and 17-18. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 102

In the Final Office Action, the Examiner rejected claims 9, 12, 13, and 15 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,933,597 issued to Poddar et al. ("Poddar"). Applicant respectfully traverses the rejection and submits that the Examiner has not met the burden of establishing a prima facie case of anticipation.

Poddar discloses a spacer with passive components for use in multi-chip module. Solder bumps 22 are formed on the lower surface of spacer 16 and then a solder melting operation creates the connection with bond pads on active die 12 (Poddar, col. 3, lines 2-5). Die 14 is then placed upon spacer 16 (Poddar, col. 3, lines 5-6; Figure 1). In another embodiment, the upper surface of spacer 16 is coated with a metal to form metal layer 19 (Poddar, col. 3, lines 43-44; Figure 5).

Poddar does not disclose, either expressly or inherently, at least one of: (1) a spacer between upper and lower dies in stacked dies on a package substrate to provide clearance for bond wires attaching to bond pads on the lower die; (2) a thin-film passive element integrated on the spacer; (3) an adhesive layer assembly to attach the spacer and the thin-film passive element to the upper and lower dies; and (4) conductors attached to the passive element and the adhesive layer assembly to connect the passive element to at least one of the upper and lower dies.

Poddar merely disclose that a solder melting operation creates the connection with bond pads on active die 12 (Poddar, col. 3, lines 2-5), or the upper surface of spacer 16 is coated with a metal to form metal layer 19 (Poddar, col. 3, lines 43-44; Figure 5), NOT an adhesive layer assembly to attach the spacer and the thin-film passive element to the upper and lower dies. Accordingly, Poddar does not disclose, either implicitly or explicitly, using adhesive to attach the

spacer to the active die. To clarify this aspect of the invention, claims 9 and 17 have been amended.

In addition, Poddar specifically teaches that the metal layer 19 can be coupled to a predefined power supply voltage or to a ground potential (Poddar, col. 3, lines 48-51). Therefore, Poddar does not intend or suggest using adhesive because an adhesive cannot be used to provide a pre-defined voltage potential or a ground potential.

Furthermore, Poddar merely disclose solder bumps 22 would be formed on the lower surface of spacer 26 (Poddar, col. 3, lines 2-3), NOT conductors attached to the passive element and the adhesive layer assembly to connect the passive element to at least one of the upper and lower dies. Since Poddar does not disclose or suggest an adhesive layer assembly, Poddar cannot and does not disclose conductors attached to the passive element and the adhesive layer assembly.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Vergegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989). Since the Examiner failed to show that Poddar teaches or discloses any one of the above elements, the rejection under 35 U.S.C. §102 is improper.

Therefore, Applicant believes that independent claims 9 and 24 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §102(e) be withdrawn.

Rejection Under 35 U.S.C. § 103

In the Final Office Action, the Examiner rejected claims 9-14 and 16-24 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,821,624 issued to Poddar in view of U. S. Patent Application No. 2003/0015803 issued to Prietzsch ("Prietzsch"). Applicant respectfully traverses the rejection and submits that the Examiner has not met the burden of establishing a prima facie case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP §2143, p. 2100-129 (8th Ed., Rev. 2, May 2004)*. Applicant respectfully submits that there is no suggestion or motivation to combine their teachings, and thus no *prima facie* case of obviousness has been established.

Furthermore, the Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated: “Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.” *MPEP 2141*. In *KSR International Co. vs. Teleflex, Inc.*, 127 S.Ct. 1727 (2007) (Kennedy, J.), the Court explained that “[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” The Court further required that an explicit analysis for this reason must be made. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR 127 S.Ct.* at 1741, quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). In the instant case, Applicant respectfully submits that there are significant differences between the cited references and the claimed invention and there is no apparent reason to combine the known elements in the manner as claimed, and thus no *prima facie* case of obviousness has been established.

Poddar discloses a spacer with passive components for use in multi-chip module as discussed above.

Prietzsch discloses a high density multichip module and method for manufacturing the same. An adhesive layer 22 is applied to surface of the chip 31. A spacer 5 is then applied over

the entire adhesive joint 22 (Prietzsch, paragraph [0026], lines 1-4). Another adhesive joint 23 is then applied to the spacer 5 for mounting the chip 32 belonging to the next chip plane (Prietzsch, paragraph [0026], lines 6-8; Fig. 1).

Poddar and Prietzsch, taken alone or in any combination, do not disclose or render obvious at least one of: (1) a spacer between upper and lower dies in stacked dies on a package substrate to provide clearance for bond wires attaching to bond pads on the lower die; (2) a thin-film passive element integrated on the spacer; (3) an adhesive layer assembly to attach the spacer and the thin-film passive element to the upper and lower dies; and (4) conductors attached to the passive element and the adhesive layer assembly to connect the passive element to at least one of the upper and lower dies, as recited in claims 9 and 17; and (5) the adhesive layer assembly comprising an upper adhesive layer to attach the spacer to the upper die; and a lower adhesive layer to attach the spacer and the thin-film passive element to the lower die, as recited in claims 10 and 18.

As discussed above, Poddar does not disclose, either implicitly or explicitly, or render obvious elements (1) – (4) above. Accordingly, a combination of Poddar with any other references in rejecting claims depending on claims 9 and 17 is improper.

As discussed above under the §102(e), Poddar explicitly teaches that a solder melting operation creates the connection with bond pads on active die 12 (Poddar, col. 3, lines 2-5), or the upper surface of spacer 16 is coated with a metal to form metal layer 19 (Poddar, col. 3, lines 43-44; Figure 5). Accordingly, Poddar does not intend using adhesive to attach the spacer to the active die.

In addition, Poddar teaches that the metal layer 19 can be coupled to a predefined power supply voltage or to a ground potential (Poddar, col. 3, lines 48-51). Therefore, Poddar does not suggest using adhesive.

Furthermore, modifying Poddar to incorporate the teachings of Prietzsch would render the Poddar technique being modified unsatisfactory for its intended purpose, or change its principle of operation. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of

operation of the prior invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Here, modifying Poddar to incorporate the adhesives to the spacer would render the Poddar unworkable because the adhesive cannot provide electrical connections between the spacer and the active die, or a voltage level or a ground potential. Accordingly, there is no suggestion or motivation to make the proposed modification.

Moreover, Prietzsch merely discloses the spacer 5 can be formed of a foil or a plate, such as a plastic, ceramic, or glass plate (Prietzsch, paragraph [0026], lines 4-6). These materials cannot be used to integrate a thin-film passive element.

The Examiner failed to establish a *prima facie* case of obviousness and failed to show there is teaching, suggestion, or motivation to combine the references. When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to: (A) The claimed invention must be considered as a whole; (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) Reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). “When determining the patentability of a claimed invention which combined two known elements, ‘the question is whether there is something in the prior art as a whole suggest the desirability, and thus the obviousness, of making the combination.’” *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992), 24 USPQ2d 1040; *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ (BNA) 481, 488 (Fed. Cir. 1984). To defeat patentability based on obviousness, the suggestion to make the new product having the claimed characteristics must come from the prior art, not from the hindsight knowledge of the invention. *Interconnect Planning Corp. v. Feil*, 744 F.2d 1132, 1143, 227 USPQ (BNA) 543, 551 (Fed. Cir. 1985). To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the Examiner to show a motivation to combine the references that create the case of obviousness. In other words, the Examiner must show reasons that a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the prior elements from the cited prior

references for combination in the manner claimed. *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1996), 47 USPQ 2d (BNA) 1453. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973. (Bd.Pat.App.&Inter. 1985). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Furthermore, although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." *In re Mills*, 916 F.2d at 682, 16 USPQ2d at 1432; *In re Fritch*, 972 F.2d 1260 (Fed. Cir. 1992), 23 USPQ2d 1780.

Moreover, the Examiner failed to establish the factual inquires in the three-pronged test as required by the *Graham* factual inquires. There are significant differences between the cited references and the claimed invention as discussed above. Furthermore, the Examiner has not made an explicit analysis on the apparent reason to combine the known elements in the fashion in the claimed invention. Accordingly, there is no apparent reason to combine the teachings of Poddar and Prietzsch.

In the present invention, the cited references do not expressly or implicitly disclose any of the above elements. In addition, the Examiner failed to present a convincing line of reasoning as to why a combination of Poddar and Prietzsch is an obvious application of integrating passive components on spacer on stacked dies, or an explicit analysis on the apparent reason to combine Poddar and Prietzsch in the manner as claimed.

Therefore, Applicant believes that independent claims 9 and 17 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §103(a) be withdrawn.

Conclusion

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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